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Educational Testing Service is involved in a measurement approach to research in teaching with a goal of developing procedures for obtaining objective quantitive descriptions of teacher behavior, in terms of a minimum number of dimensions, on the basis of direct observation. The Observation Schedule and Record (OScAR), a card which contains a list or taxonomy of behaviors the observer is to look for during a classroom visit and which provides space for recording the frequency of occurrence of each item, may be used to produce profiles to study differences in behavior of effective and ineffective teachers, to measure changes in teachers during training, and to measure the effects of training on teacher behavior. Two research studies have been made using the OScAR technique, one of New York City first-year elementary teachers (to compare the relative merits of several measures of teacher effectiveness) and one of student teachers in a campus school (to observe changes in their behavior). Both studies illustrate that information about areas where both our ignorance and our need for knowledge are great can be obtained by studies using the OScAR technique. Currently an omnibus instrument, the first part of which deals only with teachers' verbal behaviors, is being constructed for use in a number of projects designed either to do research or to implement educational change. (JS)

STUDYING TEACHER BEHAVIOR WITH THE OScAR TECHNIQUE

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In the last 20 years or so there has been a growing interest on the part of educational research workers in the study of the teaching process as distinguished from the learning process. Research in teaching has one important advantage over research in learning; you can't do it with rats. In fact, it is so difficult to do research in teaching anywhere but in the classroom, that practically all of it has been done with real teachers and real pupils. I call this an advantage because it means that anything the researchers happen to find out is much more likely to be useful than something they discover about rats in a maze--or at least its usefulness is more obvious. Research in teaching has another valuable by-product; many of the instruments used by researchers to study teacher behavior can also be used by supervisors, teachers, and others more interested in changing than in studying teacher behavior.

Today I want to discuss the work of our own group. Since we have been rather closely concerned with instrumentation, instrumentation will be the main focus of my remarks. And I will pay particular attention to the possibility that our approach to the study of teaching may prove useful in projects less concerned with research than with direct intervention in the educational process.

Our approach differs from that used by most other groups interested in the teaching process in that it has been basically a measurement approach. Our goal has been to develop procedures for obtaining objective quantitative descriptions of teacher behavior, in terms of a minimum number of dimensions, on the basis of direct observation. Behavior profiles so obtained could be used to study differences in behaviors of effective and ineffective teachers, to measure changes in teachers during training, to measure the effects of training on teacher behavior, and for a host of other purposes.

The name OScAR, which is an acronym for "Observation Schedule and Record," refers to a card or sheet of paper which contains a list or taxonomy of behaviors the observer is to look for during a classroom visit, and also provides space for recording the frequency of occurrence of each item. An effort is made to specify the items to be observed in such a way that the cues on which they are discriminated will be as simple and as easily recognized as possible, so that the observer will need a minimum amount of sophistication and special training. His task is to record what he sees without judging or evaluating.

Scoring is a separate step from observing, and is essentially a clerical task of combining items into sets or "keys" each of which describes an interesting aspect of behavior. Factor analytical methods are then used to derive dimensional scores from the keys.

Our first study using the technique was made in New York City elementary schools with first-year teachers who had been trained in the municipal college system. In addition to the observational data we also obtained each teacher's scores on several criteria of effectiveness.

To illustrate one of the uses of objective behavior measurements, we may examine the data of this study to see what we can learn from them about the meaning of various measures of teacher effectiveness often used as criteria in research studies, as well as for selection, promotion, merit pay, and the like.

Ratings of teacher competence by principals' and pupils' reactions to the teacher were found to favor teachers whose classrooms were pleasant and orderly. Pupils also tend to prefer teachers who emphasize verbal activities rather than non-verbal ones, but principals' ratings are unrelated to this dimension. Neither the pupils' nor the principals' opinions about a teacher's competence had any detectable relationship to how much the pupils learned from the teacher.

Since much research in teacher effectiveness has used ratings of competence as a criterion, these findings have definite bearing on the interpretation of the results of such studies. And since ratings are also widely used in promoting teacher determining who is to get merit pay, etc., they suggest that we may be rewarding teachers more for keeping pupils quiet and happy than for helping them learn.

Teacher self ratings, on the other hand, did indicate how effective the teachers were in helping pupils learn, but not how well either pupils or principals like the teacher. Teachers who rated themselves as highly effective tended to permit less small group work than those who rated themselves as less effective. However, when mean pupil gain was correlated with teacher behavior it did not show any relationship either to social organization or to verbal emphasis; and its relationship to emotional climate, though positive, was too small to justify any confidence.

The second study I want to mention involved student teachers in a campus school; two observations were made of each student teacher at the beginning and at the end of the semester with the principal purpose of studying changes in their behavior. So far as we were able to ascertain, no such study had ever been done before--no attempt to make objective comparisons between the behavior of the same teacher at different periods in his career had ever been made.

The OScAR used in this study was a rather elaborate one; it was scored on 35 keys and yielded 8-dimensional behavior profiles. To get some idea of the magnitude of changes which took place, we noted that 12% of all variations in behavior observed represented changes, and that 46% represented stable differences between different teachers--a ratio of about one to four.

Of the observed changes, about half were idiosyncratic--that is, represented instances in which students teaching under virtually identical

conditions--same supervisor, cooperating teacher, and pupils--changed in opposite directions. About a fourth represented changes uniform for all student teachers; these may be interpreted as representing the effects of the experience itself.

What was the nature of these changes? Behaviors related to affective climate were the most stable of all. Teachers' use of approval and disapproval showed almost no change, nor was there any appreciable gain in the teacher's awareness of pupils' feelings.

The pattern of pupil behavior changed significantly; pupil activity increased but the amount of initiative or freedom the teacher permitted did not. The teacher's own role also changed significantly. He increased in presence (appearance of control both of his own and his pupils' behavior). His teaching style became less imaginative and original, but more informative --dealt with more content.

I think these two examples illustrate that information about areas where both our ignorance and our need for knowledge are great can be obtained by studies using the OScAR technique. Both of these studies used OSCARs which were hastily constructed for those studies alone.

Currently we are at work on a carefully constructed instrument which may prove useful in a number of projects--some of which may be done by others.

OScAR 4V is the first part of this omnibus instrument, a part dealing only with teachers' verbal behaviors. It provides for the coding of each teacher utterance into one of 50 different categories. The cues used in the coding are extremely simple; classifying any verbal behavior requires a series of no more than six elementary yes-no decisions. An example of a teacher statement needing the maximum number of discriminations is the following:

"A funny thing happened to me on the way to school." The discriminations needed to code this are as follows:

1. Did teacher say it? (Yes)
2. Did it solicit a pupil response? (No)
3. Did it deal with feelings, values, desires? (No)
4. Did it deal with content the pupils are supposed to learn? (No)
5. Did it constrain or limit pupil behaviors? (No)
6. Does it belong in the same category as the last teacher statement? (no)

The types of behaviors discriminated in the system look in general like things one should know about a teacher. Statements are classified according to whether they relate to motivation, management, or subject matter; questions are classified according to whether they call for a prescribed answer, offer the pupil a chance to originate his own answer, or ask him to discuss a previous pupil comment. Information is obtained about how complex the content of a lesson is, how intense the hostility or supportiveness of the teacher, the extent to which the teacher dominates the pupils, what kind of pupil behavior he encourages, how he uses criticism and objectives feedback, and so on.

If we had used this OScAR in the two studies I have described, it seems likely that we would have learned much more both about criteria of effectiveness and about how teachers' behavior changes with experience. One of my main reasons for being here is to encourage others to use OScAR in studies of these and other problems.

My other purpose is to suggest that this kind of instrument might also be very useful in projects whose purpose is not do research but to implement educational change. If the project is dependent upon producing changes in teacher behavior--whether by better training or supervision, by introducing new curricula or materials, or by reorganizing the administrative structure to free teachers to teach better, systematic measurements of teacher behavior can make an important contribution to its success. Such measurements can tell you whether or not teachers do in fact teach differently after the change; they may tell you why some teachers improve and others get worse after the innovation; if they are used for feedback they can be instrumental in expediting the changes teachers need to make in their behavior if the new program is to achieve its goal.